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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/684,403	10/15/2003	Hideki Kuwajima	2003_1435A	4372

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EXAMINER

RENNER, CRAIG A

ART UNIT	PAPER NUMBER
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2627

DATE MAILED: 07/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/684,403	Applicant(s) KUWAJIMA ET AL.	
	Examiner Craig A. Renner	Art Unit 2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) 2,5,12-17 and 20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3,4,6-11,18,19 and 21-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 October 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>10/15/03; 1/12/05 & 2/15/06</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of "invention I, claims 1, 3-11 and 18-25" and "species I", upon which "Claims 1, 3-11 and 18-25" are said to be "readable", in the reply filed on 08 June 2006 is acknowledged. Claims 5 and 20, however, do not read on elected species I as this species does not include "a plurality of ladder shaped coupling portions." Non-elected species II of FIG. 17 includes "a plurality of ladder shaped coupling portions." Accordingly, claims 2, 5, 12-17 and 20 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to one or more non-elected inventions/species, there being no allowable generic or linking claim.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

3. The drawings are objected to because of the following informalities:

a. The drawings fail to comply with 37 CFR 1.84(p)(5) because they include one or more reference signs not mentioned in the description. Note, for instance, "F" (shown in FIGS. 1 and 2, for instance), "L" (shown in FIG. 14, for instance), "3X" (shown

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in FIG. 14, for instance), "10c" (shown in FIG. 14, for instance), and "58" (shown in FIG. 18, for instance).

b. In FIG. 4, the lower right reference sign "8b" should be changed to --8a-- in order to be consistent with the remainder of the disclosure.

c. In FIG. 10, the upper right reference sign "16" should be changed to --6-- in order to be consistent with the remainder of the disclosure.

d. In FIGS. 13B and 13C, each instance of "wring" should be spelled --wiring--.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) and/or an amendment to the specification in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

4. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

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5. The disclosure is objected to because of the following informalities:

- a. In line 3 on page 9, "forth" should be spelled --fourth--.
- b. In line 3 of claim 8, "opposite directions each other" should be changed to --opposite directions with respect to each other-- for better clarity.
- c. In lines 2-3 of claim 9, "has thin film piezoelectric body" should be changed to --has a thin film piezoelectric body-- for better clarity.
- d. In lines 3-4 of claim 10, "each comprising of thin film piezoelectric element covered by metal coating layer" should be changed to --each comprising of a thin film piezoelectric element covered by a metal coating layer -- for better clarity.
- e. In line 3 in each of claims 11, 18-19 and 21-25, each instance of "head:" should be changed too --head;-- for better clarity.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1, 3, 7 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Takeuchi et al. (US 2002/0017014).

Takeuchi et al. (US 2002/0017014) teaches a piezoelectric actuator (1) comprising a flexible substrate (includes 6 and 7) separated by a slit (8); a first piezoelectric element unit (right-most 2) disposed on one (6) of the separated flexible substrates; a second piezoelectric element unit (left-most 2) disposed on another (7) of the separated flexible substrates approximately in parallel with the first piezoelectric element unit (as shown in FIG. 15, for instance); and a coupling portion (12, for instance) to couple the separated flexible substrates across the slit (as shown in FIG. 15, for instance) [as per claim 1]; wherein the coupling portion is provided at a position corresponding to an antinode of primary bending mode of the first piezoelectric element unit and the second piezoelectric element unit being fixed in respective both ends (as shown in FIG. 15, for instance) [as per claim 3]; wherein the thickness of the coupling portion is larger than the width of the coupling portion (as shown in FIG. 15, for instance) [as per claim 7]; and wherein the first piezoelectric element unit and the second piezoelectric element unit has a thin film piezoelectric body (2c), respectively [as per claim 9].

8. Claims 1, 8, 9, 11, 23 and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Inagaki et al. (US 2002/0012194).

Inagaki et al. (US 2002/0012194) teaches a piezoelectric actuator comprising a flexible substrate (31) separated by a slit (between 31a and 31b); a first piezoelectric

element unit (40A) disposed on one (31A) of the separated flexible substrates; a second piezoelectric element unit (40B) disposed on another (31B) of the separated flexible substrates approximately in parallel with the first piezoelectric element unit (as shown in FIG. 2, for instance); and a coupling portion (31D) to couple the separated flexible substrates across the slit (as shown in FIG. 2, for instance) [as per claim 1]; wherein the first piezoelectric element unit and the second piezoelectric element unit make a displacement in opposite directions (P and Q) with respect to each other (as shown in FIG. 4, for instance) [as per claim 8]; wherein the first piezoelectric element unit and the second piezoelectric element unit has a thin film piezoelectric body, respectively (lines 3-6 in paragraph [0080], for instance) [as per claim 9]; and wherein the piezoelectric actuator is a component of a disk drive (1500) comprising at least a disk (1503); a head slider (11) equipped with a magnetic head (1); a flexure (1510/20) to fix the head slider; an arm (1501) to be fixed with the flexure; a first positioning means (includes 1502, for instance, in at least an equivalent structural sense) to move the arm roughly; and a second positioning means (includes 40, for instance, in at least an equivalent structural sense) to make the head slider fixed on the arm perform a fine displacement, wherein the second positioning means is the piezoelectric actuator [as per claim 11, 23 and 24].

9. Claims 1, 4, 6, 8-11, 19, 21 and 23-25 are rejected under 35 U.S.C. 102(b) as being anticipated by Kuwajima et al. (US 2001/0021086).

Kuwajima et al. (US 2001/0021086) teaches a piezoelectric actuator comprising a flexible substrate (8, lines 5-7 in paragraph [0138], for instance) separated by a slit

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(between 8D and 8E); a first piezoelectric element unit (11A) disposed on one (8D) of the separated flexible substrates; a second piezoelectric element unit (11B) disposed on another (8E) of the separated flexible substrates approximately in parallel with the first piezoelectric element unit (as shown in FIG. 4, for instance); and a coupling portion (8C) to couple the separated flexible substrates across the slit (as shown in FIG. 4, for instance) [as per claim 1]; wherein the coupling portion is composed of a wiring material (13C) provided on the flexible substrate [as per claim 4]; wherein the wiring material is in common use for the first piezoelectric element unit and the second piezoelectric element unit (paragraph [0108], for instance) [as per claim 6]; wherein the first piezoelectric element unit and the second piezoelectric element unit make a displacement in opposite directions with respect to each other (as shown in FIGS. 10, 20, 21A, 21B, 22A and 22B, for instance) [as per claim 8]; wherein the first piezoelectric element unit and the second piezoelectric element unit has a thin film piezoelectric body, respectively (lines 1-2 in paragraph [0105], for instance) [as per claim 9]; wherein the first piezoelectric element unit and the second piezoelectric element unit form a multilayered structure (310) using two thin film piezoelectric element bodies (includes 311A and includes 311B), each comprising a thin film piezoelectric element (311A, or 311B) covered by a metal coating layer (312A and 312B, or 312C and 312D) on top and bottom surfaces (as shown in FIG. 33, for instance), with an adhesive layer (313) sandwiched between the bodies (as shown in FIG. 33, for instance) [as per claim 10]; and wherein the piezoelectric actuator is a component of a disk drive (paragraph [0002], for instance) comprising at least a disk (line 11 in paragraph [0092], for instance); a

head slider (2) equipped with a magnetic head (1); a flexure (4) to fix the head slider; an arm (line 5 in paragraph [0087], for instance) to be fixed with the flexure; a first positioning means (line 3 in paragraph [0129], for instance, in at least an equivalent structural sense) to move the arm roughly; and a second positioning means (includes 11A and 11B, for instance, in at least an equivalent structural sense) to make the head slider fixed on the arm perform a fine displacement, wherein the second positioning means is the piezoelectric actuator [as per claim 11, 19, 21 and 23-25].

10. Claims 1, 8-11 and 23-25 are rejected under 35 U.S.C. 102(e) as being anticipated by Kuwajima et al. (US 2004/0114279).

Kuwajima et al. (US 2004/0114279) teaches a piezoelectric actuator comprising a flexible substrate (F) separated by a slit (between 8a and 8b); a first piezoelectric element unit (10a) disposed on one (8a) of the separated flexible substrates; a second piezoelectric element unit (10b) disposed on another (8b) of the separated flexible substrates approximately in parallel with the first piezoelectric element unit (as shown in Fig. 5, for instance); and a coupling portion (14a or 14b) to couple the separated flexible substrates across the slit (as shown in Fig. 5, for instance) [as per claim 1]; wherein the first piezoelectric element unit and the second piezoelectric element unit make a displacement in opposite directions (D and E) with respect to each other (as shown in Fig. 20, for instance) [as per claim 8]; wherein the first piezoelectric element unit and the second piezoelectric element unit has a thin film piezoelectric body, respectively (as shown in Fig. 6, for instance) [as per claim 9]; wherein the first piezoelectric element

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unit and the second piezoelectric element unit form a multilayered structure using two thin film piezoelectric element bodies (includes 11a and includes 11b), each comprising a thin film piezoelectric element (11a or 11b) covered by a metal coating layer (12a and 12b, or 12c and 12d) on top and bottom surfaces, with an adhesive layer (13) sandwiched between the bodies (as shown in Fig. 6, for instance) [as per claim 10]; and wherein the piezoelectric actuator is a component of a disk drive (Fig. 21, for instance) comprising at least a disk (150); a head slider (102/2) equipped with a magnetic head (1); a flexure (104/4) to fix the head slider; an arm (106) to be fixed with the flexure; a first positioning means (includes 112 and 114, for instance, in at least an equivalent structural sense) to move the arm roughly; and a second positioning means (includes 10, for instance, in at least an equivalent structural sense) to make the head slider fixed on the arm perform a fine displacement, wherein the second positioning means is the piezoelectric actuator [as per claim 11 and 23-25].

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

13. Claims 11, 18, 22 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeuchi et al. (US 2002/0017014).

Takeuchi et al. (US 2002/0017014) teaches the piezoelectric actuator as detailed in paragraph 7, supra, further wherein the piezoelectric actuator is used with a magnetic head (line 7 in paragraph [0089], for instance). Takeuchi, however, remains silent as to the piezoelectric actuator and the magnetic head being components of a disk drive comprising at least a disk, a head slider equipped with the magnetic head, a flexure to fix the head slider, an arm to be fixed with the flexure, a first positioning means to move the arm roughly, and a second positioning means to make the head slider fixed on the arm perform a fine displacement, wherein the second positioning means is the piezoelectric actuator.

Official notice is taken of the fact that it is notoriously old and well known in the art to have a piezoelectric actuator and a magnetic head be components of a disk drive comprising at least a disk, a head slider equipped with the magnetic head, a flexure to fix the head slider, an arm to be fixed with the flexure, a first positioning means to move the arm roughly, and a second positioning means to make the head slider fixed on the arm perform a fine displacement, wherein the second positioning means is the

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piezoelectric actuator, in the same field of endeavor for the purpose of enabling information storage/retrieval. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have had the piezoelectric actuator and the magnetic head of Takeuchi et al. (US 2002/0017014) be components of a disk drive comprising at least a disk, a head slider equipped with the magnetic head, a flexure to fix the head slider, an arm to be fixed with the flexure, a first positioning means to move the arm roughly, and a second positioning means to make the head slider fixed on the arm perform a fine displacement, wherein the second positioning means is the piezoelectric actuator. The rationale is as follows:

One of ordinary skill in the art would have been motivated to have had the piezoelectric actuator and the magnetic head of Takeuchi et al. (US 2002/0017014) be components of a disk drive comprising at least a disk, a head slider equipped with the magnetic head, a flexure to fix the head slider, an arm to be fixed with the flexure, a first positioning means to move the arm roughly, and a second positioning means to make the head slider fixed on the arm perform a fine displacement, wherein the second positioning means is the piezoelectric actuator since such enables information storage/retrieval.

Pertinent Prior Art

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. This includes Inamura et al. (US 5,764,444), Koganezawa et al. (US 6,327,120), Kuwajima et al. (US 2002/0048124), Uchiyama (US 2003/0223155),

and Nakatani et al. (US 2004/0100735), which each individually teaches a piezoelectric actuator comprising a flexible substrate separated by a slit; a first piezoelectric element unit disposed on one of the separated flexible substrates; a second piezoelectric element unit disposed on another the separated flexible substrate approximately in parallel with the first piezoelectric element unit; and a coupling portion to couple the separated flexible substrates across the slit.

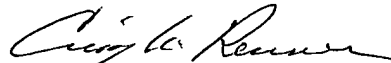
Conclusion

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Craig A. Renner whose telephone number is (571) 272-7580. The examiner can normally be reached on Tuesday-Friday 9:00 AM - 7:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa T. Nguyen can be reached on (571) 272-7579. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Craig A. Renner
Primary Examiner
Art Unit 2627

CAR